NORCOM (Wm A.B.)

HÆMORRHAGIC MALARIAL FEVER,

AN ADDRESS

DELIVERED BEFORE THE MEDICAL SOCIETY OF NORTH CAROLINA, AT ITS 21st ANNUAL MEETING, HELD IN CHARLOTTE IN MAY, 1874,

BY

WM. A. B. NORCOM, M. D.,

OF EDENTON,

PRESIDENT OF THE SOCIETY.

Compts of author.

PUBLISHED BY REQUEST OF THE SOCIETY.

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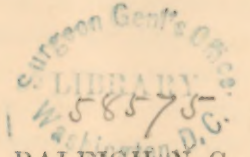

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HÆMORRHAGIC MALARIAL FEVER.

BY WM. A. B. NORCOM, M. D., EDENTON, N. C.

GENTLEMEN: I thank you for the honor done me. It is customary for the presiding officer of a State Medical Society to write an address upon some subject of general interest to the profession, and not strictly medical. From this I shall depart, having chosen for mine Hæmorrhagic Malarial Fever. I do this because, since our late war, it has been very prevalent in the Southern States, is a disease of great gravity, and a high mortality has generally attended its treatment; and because I am not aware that a physician in this State has contributed a paper upon this subject. It has received from different authors quite a number of names. In addition to the foregoing it is called Cachæmia, Yellow Remittent, Icterode Pernicious Fever, Malignant Congestive Fever, Up-country Yellow Fever, New Disease, Black Jaundice, Malarial Hæmaturia, &c. The name I have selected, much the best, was given it, I think, by Dr. R. F. Michel, of Montgomery, Alabama, in a paper contributed by him, in March, 1869, on this disease to the Alabama Medical Association, and which was published by request of the Society, in July following, in the *New Orleans Journal of Medicine*. Dr. Michel gives the symptomatology of this disease in an admirably graphic style, but his treatment is justly open to adverse criticism. Many authors, Dr. Michel among them, contend that it is a new disease, nowhere to be seen except in our Southern States, and that it first appeared in 1867. That this is a very

great mistake is demonstrable by a *catena* of irresistible evidence. I am not aware that it was treated of in a monograph devoted especially to it, but it is often referred to by authors in connection with their descriptions of Malarial Fevers, of which it is but a severe form. Without bringing to the witness-stand any other author, I am sure the following references to his admirable papers on Malarial Fevers, in Vol. I, of Reynolds's System of Medicine, clearly show that Dr. Maclean was well acquainted with this as well as a much severer form of Malarial Fever. Says he: "of all the symptoms *nausea and vomiting* are the most constant and the most exhausting; the vomited matters at first consist of any food that may be in the stomach, then of a watery fluid, often in surprising quantity. Soon bilious regurgitation takes place, and the rejected matters become of a greenish yellow color, then brown, and finally, in extreme cases, black, resembling the 'black vomit' of yellow fever. The resemblance will be more striking if, as sometimes happens, the skin assumes a yellow tinge and a hæmorrhagic tendency be evinced. I have seen two cases at Madras, both in officers of the Forest Conservancy Department, in which the hæmorrhagic range was most extensive, the patients passing blood *from the stomach, bowels and kidneys.*"

Now who can doubt that Dr. Maclean was long ago familiar with this disease? Dr. Capehart, of Edenton, had a case in 1866. My first case was in 1867, and Drs. Winborne and Dillard, of Chowan county, inform me that they saw a case fifteen years ago. Dr. Maclean further says: "I have notes of three other cases; in all *the urine was bloody.*" He then goes on to say: "The older authors describe, and very graphic some of their descriptions are, what they called *putrid* Remittents" These, he says, occurred in soldiers landed on the shores of Bengal, who had scurvy from protracted sea voyages, "and the mortality was shocking." "An entire regiment, 900 strong, was almost destroyed by malarial fevers and bowel complaints in a few weeks, and

those of us who survive can bear testimony to the truthfulness of the description of 'putrid' remittent fevers given by the writers above alluded to." The same author further says: "without, however, any scorbutic taint, we may have remittent fever presenting, from the commencement, an adynamic character. I was very familiar with cases of this kind when serving in the immediate vicinity of Hyderabad in the Deccan." He describes the skin in these as yellow and covered with petechiæ, the pulse exceeding 120, *and a disposition to hæmorrhage from nose, mouth and bowels.* I'm sure you'll not require of me additional proof, though I could give it, to show, not only that this is not a new disease and peculiar to our Southern States, but that it, as well as a much more malignant form of malarial fever, was known prior to 1867.

DEFINITION.—A malignant malarial fever, the result of frequent attacks of intermittent, or of a prolonged and exhausting remittent, characterized by hæmaturia, hæmatemesis, epistaxis, enterorrhagia, metrorrhagia or hæmorrhage from the gums and fauces, or from two or three of these at the same time; most distressing and incessant nausea and vomiting, and complete jaundiced condition (greenish-yellow hue) of body. The cold stage, though not always, is generally well marked, and the paroxysms oftenest recur about every ten or twelve hours, but far more frequently the fever is uninterrupted by intermission or remission.

My definition is somewhat similar to that given by Dr. Michel, but broader and more comprehensive. He only mentioned one form of hæmorrhage—the hæmaturia. A very great objection to calling this disease Malarial Hæmaturia is that it takes in only one source from which the hæmorrhage is derived.

PATHOLOGICAL ANATOMY.—Having never made a post mortem of a patient who died of this disease, I must avail myself of the labors of others; and shall draw chiefly from the writings of Prof. Jos. Jones, of the University of La., Dr.

Michel, of Montgomery, Ala., and from Prof. Maclean's articles on malarial fevers in Vol. I, of Reynolds's System of Medicine. It is much to be regretted that throughout our whole country, especially in the smaller towns, the horror which pervades the popular mind at the bare thought even of dissecting the dead, should so seriously limit scientific investigation. The physician is thus often deprived of the possession of that knowledge which might save many lives.

The morbid anatomy of this disease does not differ essentially from that of other forms of malarial fever, only in degree.

The general appearance of the bodies of those who die from this disease often shows great emaciation, though not always; the skin is of a greenish-yellow hue and sometimes mottled.

Notwithstanding the nervous system ordinarily shows no decided post mortem lesions, the symptoms during life show that it is profoundly impressed by malaria. As a general rule, the cerebro-spinal and sympathetic nervous systems present no marked lesions. (Jones.) Dr. Michel mentions none. Dependent portions of lungs congested with blood; in every other respect normal. (Jones and Michel.)

By inducing sudden congestions, by its depressing effects upon the heart, and general and capillary circulation, and by its powerful action both on the sympathetic and cerebro-spinal systems of nerves, malaria tends to cause formation of heart-clots, although there is an actual diminution of fibrin in the blood. (Jones.) The fibrinous element may be deposited in the heart and blood vessels during life, and not only give rise to distinct phenomena, but cause death in cases which would otherwise have terminated favorably. (Jones.) The heart itself presents a healthy appearance. (Michel and Jones.) The mucous membrane of stomach is softened, ecchymosed and discolored with bile. The blood vessels of stomach are injected and mottled, and of a purplish hue, which appears to indicate, not inflamation, but

strangnation and accumulation of blood in the capillaries. (Jones). The distressing vomiting appears to depend upon the contact of altered bile and the irritation of the nervous centres which supply the stomach with nervous force, by the altered blood and by the malarial poison. (Jones.) The mucous membrane of the small intestines is frequently of a purplish, irregularly injected, mottled appearance, especially after the administration of purgatives. (Jones.) The liver is of a slate and bronze hue, often softened, and increased in weight somewhat, which latter is caused partly by the stagnation and accumulation of blood in its capillaries and blood vessels, and the deposit of pigment matter in its structures. (Jones.) In one case Dr. Michel describes the liver as "firm and solid, and of a dark chocolate color." The spleen is much enlarged, softened and filled with disorganized colored corpuscles, and on the exterior of a dark slate color. (Jones and Maclean.) Dr. Michel describes the spleen as having "a firm and solid consistence." The gall bladder is distended with thick greenish-black bile. One thousand gr. Sp. Gr. 1036 have been found in it. (Jones.) In thin layers it presents a deep green and yellow color. Dr. Michel lays great stress on this condition of the gall bladder, but it is really nothing more than an aggravated condition of what exists in all forms of malarial fever. The kidneys are much increased in size and weight (Jones and Michel) being much congested. The hæmorrhage from the kidneys is preceded by congestion of these organs, and is attended with desquamation of the excretory cells and tubuli uriniferi. (Jones.) Slate-colored spots sometimes appear upon the kidneys. (Jones.) Supra-renal capsules and bladder in normal condition. What I have said concerning the post-mortem lesions found in the kidneys, applies only to Malarial Hæmaturia. In the other forms of Hæmorrhagic Malarial Fever the kidneys do not materially differ from the conditions observed after death in severe remittents.

The two most important points to note in regard to the blood in this disease is a great diminution of the fibrin and colored corpuscles. The latter suffer more from the malarial poison than any constituent of the blood, their rapid destruction loading it with black pigment, as has been clearly shown by Frerichs and J. F. Meigs. This pigment is not found in the kidneys, nor does it accompany their diseases. These facts have an important bearing on the treatment.

The mechanism of the hæmorrhage in Malarial Hæmaturia is still *a quaestio vexata*, some contending that it is a true hæmorrhage, while others think it due to elimination, the debris of the blood being removed by the depurating action of the kidney. I am inclined to think both these views correct. Prof. Jones (who thinks it a true hæmorrhage) says the pigmentary matters in the urine in the milder forms of malarial fever (non-haemorhagic) are derived chiefly from the broken down colored corpuscles, and that from a careful consideration of the symptoms and subsequent post mortem revelations, we are led to the belief that the pigment comes mainly from the blood cells, and that its amount may be taken as an index or measure of their destruction. Taking this view, which is undoubtedly correct, we do not find blood in the urine in the milder forms of malarial fever, but its debris is actually removed by the depurating action of the kidney. This is, perhaps often the case in the mild forms of Malarial Hæmaturia, but not in the severe cases. In two very admirable papers, among the best I have seen on this subject, contributed to the Richmond and Louisville Medical Journal, by Drs. Hudson and Mabry, of Alabama, this view is taken of the mechanism of the hæmaturia in the worst as well as the mildest cases. Undoubtedly it is desirable for the debris of the blood to be removed, if this could occur without an alarming hæmorrhage; for those extremely important little anatomical elements of the blood, and oxygen-carriers, the red

globules, when dead, cannot be revivified; and their removal, with the provision specified, would be most salutary. In the *worst* forms of Malarial Hæmaturia, as well as when the blood proceeds from the stomach, nose, &c., a true hæmorrhage, I think, from ruptured capillaries occurs, for the blood will clot in the vessel that receives it. I wish I could, from personal observation of the post-mortem lesions in this disease, acquit myself more creditably under this branch of the subject; but being unable to do so, I will pass at once to the

Clinical History.—The attack is usually, though not always, ushered in by a well pronounced chill, which lasts from half an hour to two hours, accompanied by intense internal burning heat, the patient craving ice and cold drinks, and at the same time importuning to be warmly covered, asking for hot bricks to the feet, &c. Exceptionally, in very rare cases no chill occurs, and in Malarial Hæmaturia, we sometimes have nothing more than slight shivering sensations, which occur just prior to the passage of the bloody urine, which is accompanied with quite intense pain over the region of the kidneys. Synchronous with the chill, or a little later, most distressing nausea and vomiting occur, the matters ejected being first whatever food may be in the stomach, and afterwards biliary matter of a thick ropy character, and of various colors—yellow, dark brown, green, and says Dr. Jones, in extreme cases, *black vomit*. Indeed in some cases profuse hæmatemesis occurs, which, far oftener than otherwise, proves rapidly fatal. I know of several such cases which occurred in the practice of some of my professional brethren, which soon terminated fatally. I am inclined to think this one of the most fatal forms of the disease except that attended with uræmic intoxication.

When Dr. Michel wrote his paper he could not have seen or heard of this form of the disease, for he says, "we have no blood, no trace of a hæmorrhage from the stomach." The distressing nausea and vomiting (though the matters vom-

ited are) is not peculiar, as some assert, to this disease, as in simple intermittents and remittents it is sometimes equally as tormenting. The nausea sometimes continues a week after convalescence is established. Along with these symptoms, and which continue until death or convalescence, comes an almost unbearable restlessness and jactitation. Sleep, unless produced by hypnotics, is impossible, and the patient constantly tosses about on the bed exhausting himself in fruitless efforts to seek comfort and repose. After the nausea and vomiting have continued a few hours, we have jaundice, the whole body rapidly assuming a bronzed yellow hue, caused by clogging up of the biliary ducts with bile and consequent absorption of biliverdin, which discolors almost all the tissues of the body.

The fever, which immediately succeeds the chill, is not often very marked and high, the pulse in adults rarely reaching 100 per minute, except after an exhausting hæmorrhage, when it goes up to 150 and is extremely feeble. Sometimes, especially in the epistaxic form, it goes up soon after the chill to 120. The temperature ranges from normal to 105°. Just prior to death, after a large hæmorrhage, it may go down to 96° or a little less. The thirst is very great and almost uncontrollable. The patient seems to crave nothing but ice cold drinks. The skin is usually not very hot, the face wears an anxious aspect and the eyes appear sunken. Headache occurs sometimes, but is usually not an annoying symptom. Hiccough rarely occurs, but when it does is very troublesome to the patient. In from one to three hours after the chill, exceptionally sooner, a bloody discharge occurs from kidneys, nose, bowels, stomach, womb, gums, or fauces, or from two or more combined. I have known a hæmorrhage to usher in an attack. The hæmorrhage occurs oftenest from the kidneys, next from the nose, and rarely from the other sources, very rarely from the gums, fauces and womb. The urine in Malarial Hæmaturia merits careful study When the hæmorrhage does not proceed from the kidneys

the urine does not materially differ from its condition in remittent fever. Its color varies from amber to black, according to the extent of destruction of the colored corpuscles, and sometimes in addition to the debris, much blood is passed from rupture of small vessels. It has an acid reaction, and the sp. gr. varies generally from 1010 to 1020 or over. The quantity passed (sometimes with pain about the neck of the bladder) is either normal (rarely below) or very much increased. In Uræmia, however, the function of the kidneys is almost, if not wholly, suppressed. Albumen is frequently found in the urine, but Dr. Jones says *never without structural alteration of the kidneys*, most probably due to the prolonged action of the malarial poison; and that this element in the urine is not to be referred to the watery condition of the blood caused by the destruction of the colored corpuscles, and diminution of the albumen and fibrin. The presence of albumen in the urine in this form of the disease is attended also, according to Dr. Jones, with the presence of colored blood corpuscles, excretory cells of the kidneys and the tubuli uriniferi, impacted often with altered blood corpuscles. He further says, he has even detected the malpighian corpuscles containing altered blood corpuscles, and deeply stained by the coloring matter of the blood. In the form of the disease, too, we are now considering, the function of the kidneys is so impaired that neither the urea nor the mineral acids are increased in the urine. They thus often accumulate in the blood, poisoning it, and also producing marked and alarming disturbance of the nervous system.

In very extreme cases, where the vitality is very low, vibices and purpura hæmorragica appear on the surface.

I will now mention a symptom, blindness, which I never saw but once, and have never seen described in any paper I have seen on this disease. It occured in Col. Garrett, of Edenton, a patient of Dr. T. J. Wright, whom I saw in consultation with him. Total blindness occurred, and *very*

suddenly. Dr. Wright thought that, owing to the general hæmorrhagic tendency (Col. G. had Malarial Hæmaturia), and the suddenly developed blindness, the latter was caused by rupture of small retinal vessels. He wrote a description of the case, and sent it to Dr. Drinkard, of Washington City, a skilled and reliable Ophthalmologist, whose views coincided with Dr. Wright's. We both regretted very much his eyes were not examined with the ophthalmoscope. This case occurred in November, 1873. The patient's vision, as soon as he began to convalesce, rapidly improved, but is not yet normal. I once inclined strongly to the belief that this blindness was due to cinchonism, as we were compelled to give him a great deal of quinine; but the great rarity of blindness from this cause, and the plausibility of Dr. Wright's view, supported by Dr. Drinkard, caused me to lose confidence in mine. This was one of the worst cases I ever saw recover, and the patient owes his life to Dr. Wright's unremitting care and attention. Col. G. can see well enough to walk about alone, but not to read well except large print.

The sighing respiration, which is a prominent symptom in this disease, seems to be due to great debility, and the extensive destruction of the red globules.

The coating of the tongue does not vary much. It is usually of a yellowish-brown color. The bowels are almost always costive, rarely loose. The dejections consist generally of dark brown fecal matter. In two of my cases the evacuations were of a tarry character, leading me to think I had the gastrorrhagic or enterorrhagic, united with the hæmaturic form of this disease. But it was not settled by the microscope. When hæmatemesis occurs as well as when the hæmorrhage comes from the lower part of the intestinal canal, it is apt to be almost entirely blood. When it proceeds from the stomach or upper part of the intestinal canal, and passes downward, it is altered "in transitu" by the gastric and intestinal secretions, and becomes of a black color, and offensive odor.

I have purposely delayed until now to speak of the remission in this disease, for my observations do not accord with those of some of my Southern brethren. Some authors speak of the remission as *always* occurring, but I have never been able to recognize one except in the *mildest* forms of this disease. In these, the hæmorrhagic discharge ceases in the remission, and in Malarial Hæmaturia the urine partially clears up, and all the other symptoms abate. In the severest forms remissions are not recognizable if they occur. The bloody discharge continues at varying intervals, and there is no abatement in the other symptoms. Some authors, too, speak of the recurrence of the paroxysms only once in twenty-four hours. I never knew the interval to be so long except in one extremely mild case. When there is a remission, the paroxysms always recur, according to my observations, every ten or twelve hours, or oftener. It is certainly reasonable to expect that they should do so. The quartan shows that malaria but feebly affects the organism, the tertian stronger, and quotidian stronger still. Then why, when the organism is overwhelmed by the prolonged action of the malarial poison, the nervous system depressed and the blood terribly impoverished, and scarce any resistive force left, should we not have the paroxysm recurring every ten or twelve hours, and in severe cases be unable to recognize any remission at all?

A favorable termination is preceded by cessation of the hæmorrhage (and in Malarial Hæmaturia the urine gradually clears up), nausea, and vomiting, restlessness and jactitation, the patient begins to sleep unaided by soporifices, and the appetite returns. An unfavorable termination is preceded by increased hæmorrhage, terrible nausea and vomiting, and jactitation, rapid exhaustion and collapse. Sometimes death occurs preceded by all the symptoms of uræmia, heart-clot, or, perhaps, cholesteræmia. When the patient dies from exhaustion, from loss of blood, the intellect is clear throughout his illness to almost the last moment of

life. Not so, of course, when it occurs from uræmic intoxication.

Causation.—Malaria is the exclusive cause of this affection, which is intensified by excessive heat. Dr. Salisbury's cryptogamic theory has not been confirmed by others; hence we are not warranted in accepting it. Oldham's views have not received favor enough from the profession to entitle them to consideration.

Before the war the Southern States were in a high state of cultivation, and the lands thoroughly drained; hence the malignant forms of malarial disease, as a general thing were not known, except in very low, badly drained, swamp lands. Within the past eight years, owing to so much land lying waste, defective drainage, and the general unsanitary condition of the country, the malarial poison has acted with an intense virulence, and caused the disease we are now considering.

Since the prevalence of this disease we scarce ever hear of the old algid pernicious fever. I will leave the solution of this to some one else. In population my county numbers about 7,000. The first case since the war occurred in 1866, since which time about fifty cases have occurred in the county.

The first summer after the war, (1865), as well as the following, a vast number of cases of malarial fever occurred, but only one case of hæmorrhagic. It is remarkable that during the four years of the war, with very little land in cultivation for-three years of that time, our people were never so healthy before. In 1868 the town of Edenton was so thoroughly drained, and put in such a sanitary condition generally, that its people enjoyed almost an immunity from malarial fevers; and the few that did occur were of a very mild type. During that time, in the country around, we had some cases of hæmorrhagic malarial fever. Edenton, since, has been sadly neglected, and this terrible form of malarial disease has been on the increase every year. Four-

fifths of the fifty cases referred to, have occurred within the past four years, and nearly half of these in the town.

It may not be out of place here to make a remark on the period of incubation of malarial fevers, for not only the laity, but many of our profession, hold erroneous views on this subject. The opinion exists in many minds that by spending the months of June and July in a healthy locality, the following two or three months can be passed in malarial districts with entire exemption from miasmatic diseases. Abundant observation has convinced me that the period of incubation is frequently not so long as a month, though it may be many months and sometimes years. Drs. Flint and Maclean put it at from ten days to a month generally. When it is delayed for several years, it is, as Dr. Flint remarks, "one of the most wonderful of the striking facts pertaining to these diseases." Dr. Maclean refers to an instance in which the period of incubation was less than twenty-four hours.

Diagnosis.—Under this head I have but little to say. There is, I think, but one disease for which it may be mistaken —Yellow Fever. The jaundice, nausea, and vomiting, albuminous urine, and black-vomit, together with impaired capillary circulation, make it somewhat resemble Yellow Fever, and the occurrence of these where Yellow Fever was prevailing might mislead one not well acquainted with the latter disease. As I have never seen a case of Yellow Fever, I must refer you for the differential diagnosis to the writings of Southern authors, especially to the valuable contributions of Dr. Jones. This "undaunted soldier of truth," and one of the most reliable scientific investigators in the medical profession of our country, to whose kindness I am mainly indebted for my knowledge of the morbid anatomy of this disease, is now preparing a work embodying all his original investigations for the past twenty years.

Prognosis.—All authors report the prognosis of this disease as very unfavorable, the mortality ranging from 25 to

50 per cent., and sometimes higher. Dr. Michel, in the paper already referred to, calls it the most fatal disease he ever saw, and says that both he and Dr. T. C. Osborn, of Greensboro', Alabama, lost 50 per cent. of their cases. I don't think a patient with this disease could possibly recover without treatment; and to treat them on antiphlogistic principles would not only surely cause death, but they would be hastened to the grave with almost telegraphic speed. The treatment greatly influences the mortality, the best chance, by far, of recovery being in a vigorous abortive and restorative treatment. The danger to life in all forms of malarial fevers is, of course, chiefly due, as Maclean says, to "the degree of malarial cachexia and the organic changes to which it gives rise." In previously hard-worked, badly fed and broken down subjects the mortality is very high, as well as in those addicted to the excessive use of alcohol. The hæmaturic attended with uræmic intoxication, and the gastrorrhagic, are, perhaps, the most fatal forms; the non-uræmic hæmaturic, enterorrhagic, and epistaxic coming next. When two or more forms occur at same time of course the chances of recovery are greatly diminished When hæmorrhage occurs from the womb, gums and fauces, it almost always does so in connection with some other form of the disease; and shows an extreme cachexia and very low state of vitality. I should state, too, that the circumstances of the patient and good nursing have a certain influence on the mortality. If the patient cannot secure good nursing and good food the best medical treatment often fails.

I have treated (all within the past seven years) eleven cases of this disease, ten of which recovered. My first case, the one that died, sank from pure exhaustion within an hour after I first saw her, her intellect being perfectly clear to almost the very close of life. This case occurred in a young girl just budding into womanhood, and was of the hæmaturic form. She was "in articulo mortis" when I saw her, and remedial measures proved totally unavailing. In the

ten cases that recovered, eight were of the hæmaturic form, and the other two of the epistaxic. One of the latter was very mild, having a marked remission, almost intermission, of twenty-four hours. The other nine were *very* severe cases, and had no remission whatever. In two of the hæmaturic slight symptons of uræmia occurred.

The duration of the disease depends greatly on the treatment. Dr. Michel puts it at from four to twelve days. In my ten cases that recovered, they were all convalescence at periods varying from three to six days. In fifty cases that have occurred in this county within the past eight years, death or convalescence took place before the tenth day. It was exceptional for either to occur later than the fifth day.

Modes of Death.—Death occurs in this disease in four ways, and in frequency in the order in which I shall name them: from exhaustion, from uræmic intoxication, from heart-clot, and, probably, from cholesteræmia.

Prophylaxis.—This consists in those measures which will prevent the milder forms of malarial fever. Exposure to early morning and night air should be avoided, and it is well to wear thin flannel next to the skin. Linen clothes may be worn on very warm dry days, but early in the morning and at night cassimere should be substituted. And as the cool frosty weather of Autumn approaches thick warm clothes should be worn. One whose system has been depressed, and blood impoverished, by severe heat and malaria, keenly feels the first cool weather, and particularly needs warm clothing and easily digestible and assimilable nutritious food. Indeed, all through the summer, the patient must live on a lighter diet (unless he be a hard laborer) than in winter, for the digestive apparatus participates in the general debility of the economy. From three to five grains of quinine may be taken every morning for four or five days in the week during the malarial season. Malaria has an affinity for thick foliage, hence the importance of few trees, and of keeping them well trimmed. Our late war

demonstrated the fact that soldiers encamped in malarious localities, in an open field with few or no trees, were more exempt from malarial diseases than those encamped in woods.

Persons sleeping in the upper story of houses enjoy, too, greater immunity than those who sleep near the ground. But we cannot too strongly insist, when it can be done, that persons living in malarial districts should stay indoors until the air has received the purifying influence of the sun—Nature's disinfectant.

Treatment.—Were I to commence, under this head, by giving you a list of the remedies that have been highly recommended for this disease, I would scarcely have paper enough here on which to write them. One physician extols, in addition to the mercurial and quinine treatment, nitrate of potash, water-melon seed tea, sweet spirits of nitre and buchu as diuretics, &c.; another says his sheet anchor is hyposulphite of soda; in Florida "in addition to the mercurial treatment, the physicians rely principally upon wood-ashes to control the bleeding;" and so I might go on enumerating them until I worried your patience.

I will, before giving the treatment which, in my hands, has proved eminently successful, proceed, with due deference to the opinions of those who differ from me, to criticise two methods of treatment which are practiced in the Southern States. Just here let me beg that you will not forget, as I advance, that the reported mortality under these forms of treatment ranges from 25 to 50 per cent. I am surprised it is not more (it must be under the first I'll consider,) and the only reason I can see why it is not heightened is, that "the Almighty, in His infinite wisdom, has endowed the animal frame with an inherent curative power to thwart the machinations of misguided men." One of these, the so-called antiphlogistic, is, I am glad to say, practiced by a very small minority; and yet I am ashamed for my profession, that a single physician of ordinary intelligence can

be found who will pursue a course of treatment so at variance with the morbid anatomy and pathology of this disease, as well as the recorded experience of a *very large* proportion of the ablest medical men in all countries. Indeed, I would not refer to this at all, did I not see from the medical journals that a few still practice it. In the Richmond and Louisville Med. Journal, for Feb'y, 1872, a physician in the South writing about this disease, says: "Many physicians in this section administer calomel and opium with a view to salivation, and place large blisters over the epigastrium." The results of this treatment are not given. Of course not. After having given you the best views known of the pathological anatomy of this disease, and asking you to consider the blood state produced by salivation, I can appropriately close all I have to say about such treatment by a quotation from Dr. Maclean, which I confidently believe reflects the views of every member present as it does of all, unbiased by a prejudice stronger than ignorance, who have devoted even a small portion of time to the clinical study of this disease. Says Dr. Mclean: "A practitioner of this school in India, in the present day would be an object of terror to all educated men within reach of his prescriptions. Beyond measure miserable is the spectacle of a man whose system, already saturated with malaria, is still further depraved by the mercurial cachexy." For those who pursue such a treatment in such a disease—

> "The only solace, if solace it be,
> Is that of a blind activity."

I next come to those who pursue a socalled preparatory treatment before using quinine. These I think are far more numerous than the antiphlogistics and those who pursue the abortive and restorative treatment combined. In addition to the preparatory treatment, they also use strongly restorative measures. That I may do them no injustice, and to perfectly illustrate their practice, I will quote from a paper on this disease by a prominent southern physician,

published in a southern medical journal, at the request of the State Medical Society before which it was read. The views I am now about to criticise are held by some distinguished physicians. I shall do so in the kindest spirit, and then see if I cannot point to a practice far better supported by pathology and clinical experience. I will now give you this author's treatment, but must ask you to bear in mind that he gives his mortality *at fifty per cent.* Says he: "We must rely for success upon the administration of calomel and quinine. The former is used for its peculiar impression upon the liver and portal circulation, in addition to its purgative quality; and the latter not only for its tonic, but mainly for its antiperiodic property." He first gives twenty grains of calomel, and in six or eight hours, a dose of castor oil; and as soon as successful purgation has been secured, he gives 3 grs. quinine and ½ gr. capsicum every hour until 21 grs. of the former and 3½ grs. of the latter are taken, being careful to give the entire amount at least two hours before the expected paroxysm. *He prefers waiting until the mercurial purge has finished its work before attempting to ward off the next febrile paroxysm.* "Should the chill recur," he further says, "with all its serious consequences," he again gives quinine, commencing before the intermission or remission occurs, in 3 gr. doses *every two hours* until 20 or more grains are taken or until the patient is thoroughly quininized. Others who pursue a similar treatment may sometimes give less or more calomel, and quinine in larger doses. Our author, previously to giving the treatment, says, "the bile is freely secreted, lodged in almost every tissue except the brain." Let us now carefully examine this treatment and see if it does not favor the high rate of mortality that attends it. And first, a few words only about mercury and its much vaunted cholagogue powers, for we have not now time to discuss this subject. Our author gives calomel "for its peculiar impression upon the liver," having previously admitted that the bile is "freely secreted."

But some *will* insist that the liver *is* torpid. *Is* the liver *specially* torpid, requiring a *special* remedy? Are not the brain, heart, stomach, lungs, feet, hands—yes, the whole individual—more or less torpid? Does he not manifest *in all* his functions lowered vitality? By the light that now guides us these questions must be answered affirmatively. Is mercury a cholagogue? As before said, we have not time here to discuss this subject, but would simply ask, do the experiments of Scott and the Committee appointed by the British Medical Association to investigate this subject, reported through their Chairman Prof. Bennett go for nothing in establishing this question? Must such evidence be set aside for that of the physician who simply says "my experience" teaches me that mercury *does* act specifically on the liver, and when asked for his *proof*, almost invariably replies, "my senses *cannot* deceive me—my eyes *see* the bilious passages that follow the administration of this potent medicine." In diarrhœa following the ingestion of irritating articles of food, would not his eyes also see the same bilious stools? In both cases, is not the bile hurried down and out *per anum* before time is allowed for its reabsorption? This view is held also by Murchison. In the London Med. *Times* and *Gazette*, of March 14th, 1874, he says, "Mercury, podophyllin, &c., may sweep out the bile from the intestine before it is absorbed, but it does not follow that more has been secreted." In this sense only would I call mercury a cholagogue. It drives out the bile already made but does not cause the liver to make more. It seems to us that the most scientific and reliable experimenters have shown that *food*, and *not mercury*, is the natural and appropriate stimulus to bile-flow. The pathologist to-day tells us that the blood of the patient suffering from *malarial cachexia* contains black pigment, which is chiefly derived from the broken down red globules. Now if we reflect upon the important function of these little bodies in the animal economy, and the destructive influence exercised upon

them, as well as the other constituents of the blood, by mercury, the absence of proof of its cholagogue power, even if we admit special torpidity of the liver, ought we to use such an agent *except as a purgative*, this being the only beneficial action we *know* it to possess in such cases?

But here is something very strange and must contribute not a little to fatality in this disease. Our author, from whom we quoted a little while ago, and who may be taken as a good type of those who pursue the so-called preparatory treatment, first gives 20 grs. calomel, and in six or eight hours a dose of oil; after the operation of which he gives quinine, preferring, as he says, to wait for the action of the medicine before giving *the only remedy* (quinine) upon which we can rely *to cure the disease*. Suppose the next paroxysm should carry off the patient, would he say the result was due to the *symptoms* he was combating, or to the influence of the toxic agent, the *causa mali?* Much valuable time is also wasted in treating complications.

Dr. Maclean, who has a right to speak on this subject, having had twenty-two years experience in the British army in India, condemns in unmeasured terms all except the abortive and restorative treatment of malarial fevers. And Dr. Flint, in his admirable work on Practice, strongly enforces the importance of the abortive treatment in malarial fevers, though he does not mention ever having seen a case of this disease. Surely, though, if the abortive treatment is applicable and in many cases urgently required, in the milder forms of malarial fevers, it must be ten times more so in this grave affection.

Dr. Flint says in his treatment of intermittent fever, (and he has treated in the South a large amount of malarial fevers,) "it is always desirable to arrest the disease as speedily as possible. Its morbid effects are less in proportion as it is quickly arrested, and the liability to relapses is diminished. There is no need of preparatory treatment. Aside from the delay in arresting the disease, the measures here-

tofore employed to prepare the system for the sulphate of quinine or other special remedies were injurious. These measures were mercurial cathartics, emetics, and sometimes bleeding. They are not indicated in the treatment of intermittent fever. A consideration of no small importance, as enforcing an immediate employment of the abortive treatment, is the possibility of an intermittent fever, at first simple or ordinary, becoming, after several paroxysm, pernicious." In treating of pernicious fever, he says: "In seasons when pernicious cases prevail, there is much risk of lives being sacrificed by the delay in arresting the disease, incident to the employment of the so-called preparatory measures of treatment."

But I must now give you a short quotation bearing on these points by Dr. Maclean, who was well acquainted with the disease we are considering. Says he: "Practitioners who relax in their efforts to stop the exacerbations, who pause in the use of quinine while they apply routine remedies to this or that symptom, will have little success in the treatment of the worst forms of Indian remittents. My experience has satisfied me that such symptoms are most effectually met *by the means which directly tend to counteract the poison which is keeping up the excitement and disturbing the functions of the organs to which it is conveyed by the circulation.*" He also says: "Practitioners whose choicest weapon against 'bilious' remittents is calomel, are but too familiar with the dark brownish black evacuations of cadaverous odor, the appearance of which too surely indicates that an unfavorable termination of the case is at hand."

I will not much longer detain you, as it will take me only a few minutes to give you the treatment that has so well succeeded in my hands. I shall first treat of the hæmaturic form. In this disease the doctor is called very early, either in the chill or soon after. Except measures to bring on reaction, the treatment is the same if the patient is seen after the chill. If called in the chill, see that the

patient is warmly covered, have hot bricks put to feet, spine, &c., give him hot stimulating drinks, whether he retains them or not, as the vomiting thus early will rarely do harm, but simply rid the stomach of undigested food or any offending matters that may be in it, and will also tend to bring on reaction. Then at once give him (if an adult) from $\frac{1}{4}$ to $\frac{1}{3}$ gr. acetate of morphine hypodermically. If the bowels are costive, give the patient an enema soon after giving the morphine. In twenty minutes after giving the morphine, the stomach, which shortly before would not tolerate simple water in small quantities, will now bear quinine and a moderate amount of liquid food (beef-essence, beef-tea, &c.,) and stimulants. At this time, then, and soon after giving the enema, if found necessary to give it, administer to the patient by the stomach, in capsules or liquid form, ten grains of quinine, and in a very few minutes after double this quantity by enema. Should the patient not be able to retain it in either way (all of my cases did easily) give it hypodermically, in proportinate doses, very good formulæ for which may be found in last edition of Flint's practice.

Let these doses be repeated every hour until at least from forty to sixty grains or more are taken. If this amount of quinine should break the fever, its discontinuance now would be sure, in all severe cases, to cause a return of the symptoms. Hence it is highly important to give every day, for three or four days, from forty to sixty grains. As it is impossible to tell exactly how much quinine to give, we had better give too much than not enough; and surely I would not advise so much if less would do. I have found the amount mentioned not too much for adults. But in from four to six hours the effects of the morphine will wear out. *As soon as we perceive it is doing so*, we must give another injection, and this must be kept up at these intervals for two or three days. This at once puts the patient in a sweat (the skin thus supplementing the work of the kidneys), and

markedly relieves the distressing nausea and vomiting; the exhausting restlessness and jactitation, too, gradually giving way to quiet and repose. The patient during all this time must have all the beef tea and chicken tea, oyster soup, &c., he can possibly digest, as well as good brandy or whiskey, at intervals varying from one to three hours. One ounce of brandy or whiskey (except in old topers) every two hours will generally be enough. I have never given a purgative in this disease. I would do so if I could get its good without its bad effects; but, except one, I have never seen a case of this disease, *so fearfully* prostrating is it, in which I did not think purgation would tend greatly to bring about a fatal result. I generally give a mild purgative as convalescence begins. I treat all forms of malarial fever on the abortive plan. Iced champagne, and lemonade with claret wine in it, are very grateful drinks, and the patient may take ice and ice-water in small quantities and at not too short intervals, sedulously guarding against overloading and oppressing the stomach.

In regard to internal hæmostatics, I scarcely know what to say, as I gave none to my patients.

Some extol the mineral acids for this as well as other purposes in this disease, but they are already retained in excess in the blood. Ounce doses of lemon juice are recommended by others. But, perhaps, the best are Ergot and the preparations of Iron. But, while on this subject, I must not omit to call your attention to a paper on the use of Ergot in the hæmoptysis of phthisis, by Dr. Austie, in the May (1873) Number of the *Practitioner*. In this he thinks he has found Ergot of decided value. But let me give you a short quotation from this paper, asking you to bear in mind that his patients received at the time *no other treatment*. Says he: "There is probably no subject in practical medicine on which more divergent opinions are held than the question how far the so-called styptics, internally administered produce a real effect in checking hæmorrhage. That the

action of the more commonly employed internal hæmostatics, is, to the last degree, uncertain (even though in a moderate number of cases they may apparently act with great promptitude and effect), I think no one of large experience will deny, unless he has entered upon the inquiry with the determination to see none but successful results." We cannot easily tell the effects of a medicine without using it *alone*.

We could not do this with hæmostatics in this disease, however alarming the hæmorrhage, without being sure our patients would all die. Add to this how difficult it is to get into these patients enough of *the essentials* to save them, and you have at once my reason for never having given them. If it be true, as asserted, that Ergot slows the heart's action without disturbing its rhythm, and contracts the arterioles, it may prove a good remedy. As I believe this to be its action, as Brown-Sequard's experiments tend to show, I shall try in my next cases hypodermic injections of Ergot. While Dr. Dillard, of Chowan, does not think we have a true hæmorrhage in these cases, his experience leads him to think Ergot useful in controlling the bloody discharges. For a long time Ergot has been used as a hæmostatic.

Sometimes, though rarely, there is present a good deal of urinary irritation, which is best relieved by bicarbonate of potash.

For a similar reason to the above I have not used diuretics in this disease. Under ordinary circumstances they would be useful when the urine is scanty, but here it is next to impossible to get into our patient, by stomach, rectum and hypodermically more than enough of the essentials to save him. We must *never* forget that these essentials are *quinine, nourishment and stimulants;* and that upon these, with good nursing, our patient's safety depends; *and that without enough of these, other remedial measures would prove totally unavailing.*

Rubefacients and dry cups may be applied over the kidneys and stomach. I would never blister, for the blistered

surface would probably prove another source of hæmorrhage. Atomized Cologne thrown upon the patient's face and head with the hand-ball atomizer is very grateful and refreshing. Diarrhœa is best relieved by opiates—hypodermically or by enema.

The warm bath sometimes proves very useful.

For a month or more after convalescence begins, the patient ought to take quinine, iron and strychnine. I generally give, thrice daily, at regular intervals, to an adult, a pill containing one grain of dry sulphate of iron, two grains of quinine and 1-40 grain of strychnine.

The patient, too, should live generously. Removal to a healthy climate is a very important part of the treatment.

The treatment of the other forms must, of course, in the main be similar to this. In the epistaxic it may become necessary to plug the posterior nares. In the gastrorrhagic and enterorrhagic forms of the disease the patient must be kept perfectly quiet, which cannot be done without an opiate. In the former as little as possible must be taken into the stomach. Perhaps here the persulphate of iron by stomach, and the hypodermic use of Ergot, would do well. Small quantities of ice or cold water may be taken. Ice may be applied externally over the stomach in bladders. The same principles of treatment are applicable to the interorrhagic form. In this, as well as the above, the bowels must be kept quiet, and medicine administered hypodermically and by the mouth. Food must be given by the mouth and cold.

It would not be proper for me to close this address without having something more to say about the use of Opium in this disease. Notwithstanding its prompt relief of nausea and vomiting, thereby securing sleep and enabling the patient to take food and medicine by the mouth, a very large class of medical men, whose opinions are entitled to great weight, insist that it strongly tends to produce uræmia. If this be so, surely we must give it not at all, or with great caution. But is this true? We must remember that one

of the modes of death is by uræmic intoxication, and that this frequently occurs in the practice of those who give no opium in this disease. We must, then, carefully avoid calling a *post hoc* a *propter hoc*.

The few cases I have treated could not establish this point, but they materially help to do it. In not one of them did uræmia occur; but, in two, slight symptoms of it appeared before any opium had been given. These symptoms promptly yielded to this remedy. If opium can be shown to be a capital remedy, not only for slight symptoms of uræmia, but for uræmic intoxication, surely we have a just right to think that it would not produce it.

But while many of the most eminent physicians in all countries have warned us against the use of opium when we even suspected that uræmia might occur, I am, happily, enabled to give you the best possible evidence in support of its decided value in this disease, which I hope will go far to dissipate the fears of those who are afraid of its use in Hæmorrhagic Malarial Fever.

In a paper on Bright's disease, by Prof. Loomis, in the *Medical Record*, of May 15th, 1873, he asks the question: "What are the means we have for controlling the effects of urea upon the nervous system?" And thus he answers it: "I believe that opium is, of all drugs, the best. If called to see a patient who has already had a convulsion, or is having symptoms of convulsions, I should not hesitate to throw into his arm 10, 15 or 20 drops of Magendie's Solution of Morphine by the use of the hypodermic syringe. It will not kill him; but upon the other hand, I have seen it many times produce a calm, quiet sleep, profuse perspiration, increase the flow of the urine, and within a few hours the patient awake to consciousness as the result." Dr. Loomis frequently repeats these doses with decided benefit should symptoms of returning convulsions occur. In an article by the same author on acute uræmia in August 1st, (1873) No. of same journal, he thus speaks of Bright's disease, after hav-

ing tried in vain dry cups, diaphoretics, hydragogue cathartics, &c: "Death becoming imminent, I asked Dr. Metcalfe to see him with me. At Dr. Metcalfe's suggestion, and under his direction, I administered to him my first hypodermic injection of morphine to a patient with uræmia, expecting to see its administration followed by a fatal coma. To my astonishment my patient soon after its administration passed into a quiet sleep, from which he was easily aroused, during which he perspired freely. On the following day he reported himself as greatly relieved; his urinary secretion was re-established, and he was able to take and retain large quantities of milk. For six weeks I administered daily to this patient from 20 to 30 drops of Magendie's Solution of Morphine hypodermically, with ½ ounce infusion of digitalis twice a day. During this time, not only was he relieved of most of his distressing symptoms, but his improvement was so decided that he was able to walk about his rooms and go out to ride. In about two months he went into the country, and I only heard from him occasionally. His dropsy entirely disappeared." This patient subsequently died of another disease. Dr. Loomis gives several cases in which this treatment was followed by favorable results, but I must refer you to the journals containing his articles.

In the 4th edition of his admirable work on Practice, page 831, Dr. Flint remarks, touching this question: "At Bellevue Hospital, opium has been given largely, and chiefly relied upon in the treatment of uræmic convulsions, by my associate, Prof. Alfred L. Loomis, who has been led by his experience to consider this plan of treatment eminently successful. There is reason to believe that, so far from opium having a poisonous action, it renders the nervous system more tolerant of the uræmic poison." These views were held by me and guided my practice before the publication of Dr. Loomis's papers, and before he held similar ones, (1868.) But the following extract from a letter from

that great therapeutist, Prof. Metcalfe, of N. Y., shows that he long ago pursued this practice. A few months ago I wrote to him asking his views on this subject, after having freely given him mine in regard to the superiority, over all others, of the abortive and restorative treatment of Hæmorrhagic Malarial Fever, and the use of opium. His reply was very gratifying to me. Says he: "Were I to write pages I could say no more than to express my cordial approval of the therapeutics you have adopted. For many years I have known and taught that the old notion of incompatability between uræmia and opium, especially when we could regulate the dose (as we can by hypodermic use), was a bugbear of tradition."

Unfortunately, should uræmia or slight symptoms of it occur in the course of the affection we have been considering, we cannot use some of the measures sometimes successfully employed in this disease. We cannot use hydragogue cathartics. These would rapidly hasten death. We can use dry cups, hot air bath, and, perhaps, infusion of digitalis: but we must never crowd our patient's stomach. And polypharmacy in this disease is synonymous with fatality.

While morphine promptly relieves the nausea and vomiting, and is, I think, a capital anti-uræmic remedy, we must not abuse the advantage it gives us. We may destroy its good effects upon the stomach, by loading this organ with too much food and nauseous drugs. Every thing must give way to those things upon which our patient's safety depends, and the utmost caution and care are required in their administration. In uræmic intoxication, in addition to the hypodermic use of morphine and external measures, we are justified in giving digitalis.

The treatment, gentlemen, which I have given you, and which has served me well, is, I think, sanctioned alike by pathology, clinical experience and common sense. To delay in administering our only hope of cure, and waste time so precious in vain attempts, by a so-called preparatory

treatment, to rectify the "torpid" liver, purge away "vitiated secretions," check the hæmorrhage, &c., all *symptoms only* of the true disease, is to witness a fatality that a more rational treatment would prevent. I trust that some of you at least will give this subject careful thought and study, and that in the not distant future you may be able to throw a flood of light upon points in its pathology and therapeusis which to us now are obscure and impenetrable. We must not be too hasty in forming opinions in regard to the action and value of medicines. Let us study well physiology and pathology, and as our knowledge advances in these branches we will know more about the most difficult of all—therapeutics. In regard to the last, we must honestly say, "our knowledge is a little matter, our ignorance immense." We all should cherish this belief, and we will not then, as is too often done, by over drugging prevent our patients from getting well. Even now, in this comparatively enlightened age, polypharmacy is hurrying thousands to a premature grave. Who dares doubt this? To do so would show an ignorance of what is going on in the world. Permit me to give you on this subject of therapeutics a short quotation from an address delivered a few years ago by Sir Thomas Watson before the Clinical Society of London. Says he: "Certainly the greatest gap in the science of medicine is to be found in its final and supreme stage—the stage of therapeutics. To me it has been a life-long wonder how vaguely, how ignorantly, how rashly, drugs are often prescribed. We try this, and not succeeding, we try that, and baffled again, we try something else, and it is fortunate if we do no harm in these our tryings. Now this random and haphazard practice, wherever and by whomsoever adopted, is both dangerous in itself and discreditable to medicine as a science."

I could give you from others, the best authors in our profession, views similar to the above.

It is better for us to doubt, if by so doing we are led to

rational instead of blind belief. These views apply with striking force to my subject. In this, as well as other grave diseases, we had better be careful how we give remedies of doubtful value. For here what doesn't do good, often does much harm. And mild affections are frequently aggravated by over-medication, and a neglect of the simplest hygienic laws. Imbued with these principles, and always carefully studying the natural history of disease, we will be more likely to learn the real value of remedial agents. Let us take fresh resolves to study faithfully our profession and love it. Then the chains of tradition will never bind us, and our progress, though it may be slow, will be sure.

Let us feel with Tyndall, that "an honest receptivity and a willingness to abandon all preconceived views, however cherished, when they conflict with the truth, is the first mark of a true philosopher:" and with Richardson, the English physiologist, that "if a single earthly object has to be served by our labor, and that be its design, assuredly the labor is damned forthwith." We will then be worthy disciples of one of the noblest of professions, and honored guardians of our race, and the plaudits of grateful patrons will hail us as true friends and benefactors.


ONE CENT